"The Spectrum of γ Cygni." By Sir NORMAN LOCKYER, K.C.B., F.R.S., and F. E. BAXANDALL, A.R.C.Sc. Received December 11,—Read December 11, 1902.

(Abstract.)

The paper gives an account of the investigation of the Spectrum of γ Cygni in relation to other celestial and terrestrial spectra. It is pointed out that this spectrum—which is of the Polarian type in the Kensington classification—is the connecting link between the spectrum of the Aldebarian stars, in which the arc lines of the metallic elements predominate, and that of α Cygni, chiefly composed of the enhanced lines of some of the metals. These two sets of lines are of about equal prominence in the γ Cygni spectrum.

It is also shown that, in regard to the relative intensities of the metallic and proto-metallic lines, there is a close resemblance between the spectrum of γ Cygni and that of the chromosphere, thus indicating that the temperature and electrical conditions prevailing in the two light sources are nearly identical. A comparison, however, of the intensities of the stronger arc and enhanced lines in the two spectra tends to show that the chromosphere is, if anything, of a slightly higher temperature.

It is claimed that the majority of the lines of γ Cygni—and therefore, also, of the chromosphere—are due to metallic vapours, and that there is little evidence to support Professor Dewar's suggestion that most of the 339 chromospheric lines, recorded by Humphreys in his eclipse results, can be accounted for as probably being due to the rarer atmospheric gases.

The relation of the γ Cygni spectrum to that of α Cygni is also discussed in detail.

At the end of the paper a table is given showing the wave-lengths, intensities, and probable origins of the lines which occur in the photographic spectrum of γ Cygni, taken with a 6″ Henry prism of 45° angle. The lines are compared with those of the chromosphere, δ Canis Majoris (Pickering's record), and α Cygni.